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Cap 5

CONTROL of LICE and SHEEP TICKS on Sheep and Goats



AGRICULTURAL RESEARCH
ADMINISTRATION

U. S. DEPARTMENT OF AGRICULTURE

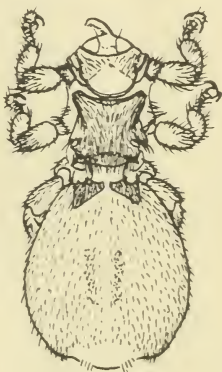
June 1951

Prepared by the Division of Insects Affecting Man and Animals, Bureau of Entomology and Plant Quarantine, and the Zoological Division, Bureau of Animal Industry.

The biting lice that attack sheep and goats are Bovicola limbatus (Gerv.), B. caprae (Gurlt), B. ovis (L.), B. peregrinus (Tasch.), and B. hermsi (Kell. & Nakayama). The blood-sucking lice are Linognathus africanus Kellogg & Paine, L. ovillus (Neumann), and L. pedalis (Osborn). The sheep tick is Melophagus ovinus (L.).

LICE cause unthriftiness in sheep and goats. The wool of infested flocks becomes ragged and inferior in quality. In the United States several kinds of lice attack sheep and goats. Some of them bite the animals and others suck their blood.

The sheep tick is a common parasite of sheep throughout the United States, and occasionally it attacks Angora goats. It is not a true tick, but a wingless fly. This parasite sucks the blood of its host, the injury being particularly severe on young lambs.



Sheep tick

Rotenone-containing insecticides will control the sheep tick and are economical. They are also effective against lice on sheep and goats. Several new insecticides--including DDT, TDE, methoxychlor, benzene hexachloride, lindane, toxaphene, and chlordane--have recently been developed which are excellent for controlling lice on goats and the sheep tick. They have not yet been tested extensively against lice on sheep. However, it is believed that they will prove equally effective when used at the same strengths. To control the foot louse, however, higher concentrations will be required. This

species lives on the sheep's foot, where the wool is short and insecticides are easily rubbed or washed off.

Formerly control of lice and sheep ticks was accomplished by use of dips containing rotenone, sulfur, creosote, arsenicals, or nicotine. With the exception of rotenone, these materials are being replaced by the new insecticides mentioned above. With the development of these highly effective materials there has been increasing interest in sprays for treating the animals. If the concentration is high enough and the spray is properly applied and timed, good practical control can be obtained. If facilities for dipping cannot be provided, sprays and in some cases dusts may be applied. However, owners of sheep and goats are urged to dip whenever possible, because dips provide the only sure way of eliminating lice or sheep ticks from their herds.

Various types of vats satisfactory for dipping sheep and goats are discussed in Farmers' Bulletin 798, "The Sheep Tick and Its Eradication by Dipping," revised in 1940. The Bureau of Entomology and Plant Quarantine publication E-406, "A Round Vat for Dipping Sheep and Goats," was issued in 1937.

How to Prepare and Use Dips

In preparing dips do not exceed the concentrations recommended in this leaflet.

For each insecticide directions are given for preparing dips from products



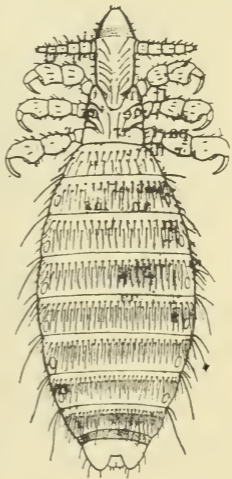
Biting
louse

of the strengths most likely to be available from your dealer. The label on the container will tell you what kind of formulation it is and how much of the insecticidal chemical it contains. If the percentage is different from that given in the directions that follow, calculate the proportionate

amount to use. If you have any questions, consult your county agent or State livestock specialists, or write the U.S. Bureau of Entomology and Plant Quarantine, Washington 25, D.C.

Rotenone insecticides are made from ground derris or cube or emulsifiable extractives of these materials.

Dips for controlling the sheep tick should contain 0.003 percent of rotenone. To prepare a dip of this strength add 8 ounces of a powder containing 5 percent of rotenone to 100 gallons of water. A single dipping will usually give complete control. For controlling lice the rotenone concentration should be 0.006 percent. Therefore, use twice as much powder to 100 gallons of water.



Sucking louse
(Both lice
enlarged)

DDT dips can be prepared from either wettable powders or emulsifiable concentrates. Although various strengths have been used with success, there is a tendency for the wool or mohair on the animals to strain out a considerable quantity of the insecticide from the water. It is therefore recommended that for controlling sheep ticks and lice on goats the vats be charged with dips containing 0.25 percent of DDT, so that good control may be obtained even after the strength has been reduced. For controlling the foot louse of sheep a 0.5-percent DDT dip is recommended.

To make a 0.25-percent DDT dip use 4 pounds of a 50-percent wettable powder or 1 gallon of a 25-percent emulsifiable concentrate to each 100 gallons of water.

Methoxychlor is usually available in the same types of formulations as DDT. Although slightly less effective, excellent control can be obtained with dips at the strengths recommended for DDT.

TDE (also called DDD) is about as effective as DDT and may be used in the same way at the same strengths.

Toxaphene may also be used at the same strengths as DDT. Emulsifiable concentrates and wettable powders containing various percentages of toxaphene are available. To make a 0.25-percent toxaphene dip use the following quantities to each 100 gallons of water:

Emulsifiable concentrates:

50 percent	2 quarts
65 percent	1 1/2 quarts

Wettable powders:

25 percent	8 pounds
40 percent	5 pounds

Chlordane is also recommended for use at 0.25-percent strength. Wettable powders and emulsifiable concentrates containing from 25 to 75 percent of chlordane are commercially available. The data given for toxaphene may help you to calculate the proper amount to use in making the dip.

Lindane is the essentially pure gamma isomer of benzene hexachloride. For controlling the sheep tick a dip containing 0.025 percent of lindane is recommended. To prepare a dip of this strength add 13 ounces of a 25-percent wettable powder, 1 pint of a 20-percent, or 0.8 pint of a 25-percent emulsifiable concentrate to each 100 gallons of water.

Less information is available regarding the effectiveness of lindane for controlling lice. In some tests complete control has been obtained with dips containing 0.025 to 0.03 percent, but in others complete control of sucking lice has not been achieved. A concentration of 0.05 to 0.06 percent is therefore suggested for controlling lice. If both lice and sheep ticks are infesting the animals, use the higher concentration.

Technical benzene hexachloride, containing 10 to 12 percent or more of the gamma isomer, has also been used for dipping sheep and goats. It is less desirable than lindane because of its strong musty odor and because some of the ingredients are more objectionable than lindane from the standpoint of toxicity to man and animals. However, technical benzene hexachloride has not harmed the animals when used as recommended and it has not been known to cause off-flavor of the flesh. If you use this material, see that the dip contains the same percentage of the gamma isomer that is recommended for lindane.

Sprays

Research with sprays for use on sheep and goats is still in progress. The suggestions given here are only tentative until further information is obtained as to the most effective insecticides, formulations, and spray equipment.

For the control of sheep ticks spray immediately after shearing or in the summer or early fall. The short wool at this time permits fairly good coverage of animals with less material, and the sheep ticks are near the outer portions of the wool, which receive the most spray.

When sheep are shorn while they are nursing lambs, ticks will migrate to the lambs. Therefore be sure to treat the lambs also.

Use sprays at twice the strength suggested for dips. This will mean using DDT, TDE, methoxychlor, chlordane, and toxaphene at 0.5 percent and lindane at 0.05 or 0.06 percent. You can increase their effectiveness by adding 1 pound of a household detergent powder to each 100 gallons of spray. Vel and Tide have been used for this purpose, although similar materials may be just as satisfactory. Rotenone sprays have not given control comparable with these new insecticides when applied to shorn sheep.

Chlordane and lindane have a fumigating as well as a contact effect on the parasites. On sheep with long, dense wool these materials have given better results than the other insecticides when used as sprays.

Low-pressure sprayers operating at pressures from 40 to 100 pounds per square inch are satisfactory for spraying small flocks. Some sort of low-pressure sprayer is usually available on the farm. High-pressure orchard-type sprayers are preferred if available, especially for treating sheep with fairly long wool.

For the control of lice on Angora goats spray as soon as possible after shearing, when the hair is short. Use DDT or one of the other insecticides at the strengths suggested for control of the sheep tick, using 1 to 2 quarts per animal. Examine the animals after 2 or 3 weeks and apply a second treatment if necessary.

The amount of spray for each animal will depend on its size and the density and length of the wool, but you may need from 1 to 3 quarts for sheep and 1 to 2 quarts for goats. Provide adequate crowding pens or chutes and apply the spray thoroughly, especially on the sides, under the throat, and on the back of the animals.

When using a power sprayer, start the sprayer and direct the spray stream into the tank until the material is well mixed before spraying the animals. Follow the same procedure before resuming treatment after the sprayer has been idle.

In some of the northern areas sheep owners prefer dusts for treating their flocks for control of the sheep tick. State workers in New York and Wyoming have reported satisfactory control with a dust containing 0.5 percent of rotenone. If you use a dust, be sure that it penetrates into the wool, so that the ticks will contact it in moving over the animal.

PRECAUTIONS

These insecticides are poisonous. Handle them with care and avoid unnecessary exposure to them. If you spill any of the concentrated insecticide on your skin, be sure to wash it off immediately.

Do not use a dip or spray if the insecticide does not mix uniformly with the water or an oily layer forms after mixing. Stir dips thoroughly before dipping animals.

Avoid contaminating food and feed utensils, animal feeds, and water with insecticides.

Do not treat goats producing milk for human consumption with DDT, toxaphene, TDE, chlordane, or benzene hexachloride, because they may contaminate the milk. Use methoxychlor or rotenone in treating these animals.

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